

METHOD, SYSTEM, AND PROGRAM PRODUCT FOR ON-LINE SERVICE CALL SCHEDULING

BACKGROUND OF THE INVENTION

The present invention generally relates to scheduling of service providers, and more particularly, to an on-line method, system, and program product for enabling a homeowner to schedule a service call for repair of a home appliance.

When, an appliance such as, for example, a refrigerator, a washer, a
5 dryer, a dishwasher, etc. requires repair, a homeowner typically telephones a local appliance repair service and schedules a service call. Thereafter, a technician visits the homeowner at the scheduled time to diagnose a problem with the appliance and, if authorized by the homeowner, to repair the appliance.

Typically, the person answering the telephone call for the appliance repair
10 service is often unable to aid the user in identifying the problem with the appliance, unable to provide an estimate for repair of the appliance, and/or unable to determine whether the appliance is covered by a warranty.

There is a need for a real-time, on-line method and system for enabling
15 a homeowner to schedule a service call for repair of an appliance such as a refrigerator, a washer, a dryer, a dishwasher, etc.

SUMMARY OF THE INVENTION

The present invention provides, in a first aspect, a method for enabling
20 scheduling of a service call in a computing environment in which the method includes, for instance, obtaining product information from a user of the computing environment, and automatically providing to the user at least one available appointment for scheduling a service call based on the product information.

The present invention provides, in a second aspect, a method for enabling scheduling of a service call for repair of a home appliance in a computing environment in which the method includes, for instance, obtaining product information at a first computing unit from input of the product information by the user at a second computing unit coupled to the first computing unit via a communications network, and automatically providing from the first computing unit to the second computing unit at least one available appointment for scheduling a service call based on the product information.

The methods and systems desirably may further include selecting or means for selecting the at least one available appointment from a plurality of appointments in which the plurality of appointments is associated with a plurality of service providers at a plurality of regional locations, and determining or means for determining in real-time the at least one available appointment. In addition, suggested product information may be provided to the user for use by the user in providing the product information, a suggested nature of a problem may be provided based on the product information, and do-it-yourself repair information may be provided based on the nature of the problem.

System and computer program products corresponding to the above-summarized methods are also described and claimed herein.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram illustrating one example of a system of the present invention for on-line service call scheduling;

FIGS. 2 and 3 together, illustrate a flow diagram of one example of the logic used for on-line service call scheduling using the system of FIG. 1;

FIG. 4 is an illustration of one example of an interactive screen for prompting and obtaining product and customer information from a user in accordance with one implementation of the process of FIGS. 2 and 3;

FIG. 5 is an illustration of one example of an interactive screen for displaying available service call appointments for a factory service provider in accordance with one implementation of the process of FIGS. 2 and 3;

FIG. 6 is an illustration of one example of an interactive screen for requesting user confirmation of a user selected service call appointment in accordance with one implementation of the process of FIGS. 2 and 3;

FIG. 7 is an illustration of one example of an interactive screen for displaying available authorized service providers in accordance with one implementation of the process of FIGS. 2 and 3;

FIG. 8 is an illustration of one example of an interactive screen for displaying available service call appointments for selection of a preferred service call appointment by the user in accordance with one implementation of the process of FIGS. 2 and 3; and

FIG. 9 is an illustration of one example of an interactive screen for updating a service call appointment in accordance with one implementation of the process of FIGS. 2 and 3.

DETAILED DESCRIPTION OF THE INVENTION

FIG. 1 is a block diagram of one example of a computing environment 100 incorporating and using the capabilities and techniques of the present invention for use in real-time, on-line scheduling of service call appointments. Computing environment 100 is desirably suitable for implementation by an appliance manufacturer for use by an appliance owner, such as, for example, a homeowner, in scheduling a service call for repair of an appliance such as a washing machine, a dryer, a dish washer, a refrigerator, a freezer, a kitchen stove, etc.

Computing environment 100 includes, for instance, at least one computing unit 120 coupled to at least one computing unit 140. In one example,

computing unit 120 is a server operated by or maintained on behalf of an appliance manufacturer, while computing unit 140 is a client accessible by a homeowner. Each unit includes, for example, one or more central processing units, memory and one or more input/output devices, as is well known in the art.

5 Computing unit 120 is based, for instance, on a Honeywell Bull mainframe running GCOS8 operating system and/or a Hewlett Packard HP9000 running a UNIX operating system.

10 Computing unit 120 desirably includes or has access to memory or data storage units, e.g., hard drive(s), compact disk(s), tape drive(s), etc., for storing various data which is accessed and used in the scheduling of service calls. As explained in greater detail below, examples of data stored and/or accessible by computer unit 120 include, data regarding a plurality of service providers (factory service providers and authorized service providers) located at a plurality of regional locations, data regarding service call appointments for the plurality of
15 service providers, data regarding suggested information regarding a plurality of products or appliances, data regarding suggested problems associated with various products, data regarding suggested do-it-yourself information, and/or data regarding warranty coverage.

20 Computing unit 140 is, for instance, a personal computer, such as a personal computer executing Microsoft WINDOWS, which runs on the Intel PC architecture.

25 Computing unit 120 is coupled to computing unit 140 via a network 160. Network 160 may comprise a local area network or a global communications network such as the Internet which comprises a vast number of computers and computer networks that are interconnected through communication links. The interconnected computers exchange information using various services, such as electronic mail, and the World Wide Web ("WWW"). The WWW service allows a server computer system (i.e., Web server or Web site) to send graphical Web

pages of information to a remote client computer system. The remote client computer system can then display the Web pages. Each resource (e.g., computer or Web page) of the WWW is uniquely identifiable by a Uniform Resource Locator ("URL"). To view a specific Web page, computing unit 140 specifies the URL for that Web page in a request (e.g., a HyperText Transfer Protocol ("HTTP") request). The request is forwarded to the Web server that supports that Web page. When that Web server receives the request, it sends that Web page to computing unit 140. When computing unit 140 receives that Web page, it typically displays the Web page using a browser. A browser is a special-purpose application program that effects the requesting of Web pages and the displaying of Web pages. Computing unit 140 may use a browser such as Microsoft Internet Explorer® or Netscape®.

Web pages are typically defined using HyperText Markup Language ("HTML"). HTML provides a standard set of tags that define how a Web page is to be displayed. When a homeowner indicates to the browser to display a Web page, the browser sends a request to the server to transfer to computing unit 140 a HTML document that defines the Web page. When the requested HTML document is received by computing unit 140, the browser displays the Web page as defined by the HTML document. The HTML document contains various tags that control the displaying of text, graphics, controls, and other features. The HTML document may contain URLs of other Web pages available on that server computer system or other server computer systems.

The above-described computing environment and/or computing units are only offered as examples. The present invention can be incorporated and used with many types of computing units, computers, processors, nodes, systems, work stations and/or environments without departing from the spirit of the present invention. For example, one or more of the units may be based on the UNIX architecture. Additionally, while some of the embodiments described herein are discussed in relation to servers and clients, such embodiments are

only examples. Other types of computing environments can benefit from the present invention and are thus, considered a part of the present invention.

Additionally, in various aspects of the present invention, the client need not be remote from the server. Various aspects of the invention are equally applicable to clients and servers running on the same physical machine, different physical machines or any combinations thereof.

An aspect of the present invention is described with reference to FIGS. 2 and 3 which illustrate a general overview of one example of an on-line service call scheduling process 200. Initially, an interactive screen is displayed (step 210, "Display Interactive Screen"), product information is suggested (step 215, "Suggest Product Information") and a nature of the problem is suggested (step 220, "Suggest Nature of the Problem") to facilitate obtaining various product information and customer information from a user (step 225, "Obtain Product Information") and the nature of the problem from the user (step 230, "Obtain Nature of the Problem").

FIG. 4 illustrates one example of an interactive screen 400 useful in the performance of process 200 at step 210. Where connection 160 comprises a global computer network, e.g., the Internet or World Wide Web, screen 400 can be displayed on, for example, a monitor of computing unit 140 (FIG. 1) using a standard Web browser. For example, a user at computing unit 140 (FIG. 1) can access an appliance manufacturer's Web site, such as, for example a Web site for the General Electric Company. From the main home page of the appliance manufacturer's Web site, the user may obtain information and/or purchase various products manufactured by the manufacturer, and in particular access, e.g., pull-up, interactive screen 400 for initiating the scheduling a service call.

Interactive screen 400 includes a plurality of product information prompts 402 and customer information prompts 404. Product information prompts 402 include product type 410, product brand 412, product model number 414,

product serial number 416, the age of the product 418, product service contract number 420, and a nature of the problem 430.

Desirably, as shown in FIG. 4, the prompts are also data entry fields for input of data by the user via a keyboard or mouse. In addition, suggested product information includes pull-down menus for suggested data items for the product type, the product brand, the product model numbers, as well as suggested nature of the problem. The various suggested data items may be stored and retrieved from one or more databases.

The list of known problems with the product can be generated or selected from a database of problems for various product types, desirably in real-time, based on the product type, the product brand, and/or the product model number selected or entered by the user. For example, if the product type selected by the user is a refrigerator, a list of problems with refrigerators may include, "ice maker not working", "freezer compartment fails to maintain temperature", "refrigerator compartment fails to maintain temperature", etc. This reduces the number of problems displayed in the pull-down menu so that the user can readily select the appropriate nature of the problem. In addition, if a product model has experienced a certain problem, that problem can be listed first in the suggested nature of the problem for selection by the user.

Interactive screen 400 also prompts a user to enter customer information such as the user's first name, last name, street address, city, state, zip code, and contact information such as a home telephone number, a work telephone number, and an e-mail address. Typically, the customer's information provides the location of the product to be serviced. However, a separate data entry line may be provided for inputting the product's location or confirming the product's location.

Once the product and the customer's information is inputted into and/or selected on the interactive information screen, the user continues by clicking on

a "continue to schedule service" button 460, to transmit the product and customer information from computing unit 140 (FIG. 1) to computing unit 120 (FIG. 1).

With reference again to FIGS. 2 and 3, do-it-yourself repair information can be selected from a database of do-it-yourself repair information (step 235, "Suggest Do-It-Yourself Repair"), desirably in real-time, based on the product information, and in particular, from the nature of the problem. For example, the monitor of computing unit 140 (FIG. 1) can indicate that do-it-yourself repair information is available and accessible. Alternatively, do-it-yourself information can be automatically displayed after receipt of the product and customer information.

Warranty validation such as whether the appliance is under warranty service or out of warranty service can be obtained from a database of warranty service information, desirably in real-time, based on the product serial number, service contract number, and/or the customer information (step 240, "Is Product Covered By Warranty"). Typically, a product warranty will have a finite life span. Where the product is not covered by a warranty, the user can be offered a warranty or offered a renewal or extended warranty coverage on the appliance, e.g., using a warranty interactive screen (step 242, "Offer Warranty"). Where the warranty for the product has expired in the recent past, a user can be provided with extended coverage for a fee. If the user extends the warranty, the database of warranty service information is desirably automatically updated.

If the product is covered by a warranty, it is determined whether the product is covered by factory service (step 245, "Is Product Covered by Factory Service"), i.e., where the appliance is serviced by employees of the manufacturer, which is typically provided in major densely populated cities or localities. If the product is covered by factory service, a schedule of currently available appointments for the user is obtained from a database of schedules of available appointments or generated from information regarding available

appointments stored in a database (e.g., in or accessed by computing unit 120, FIG. 1), desirably in real-time, based on the product location using, for example, the customer's zip code (step 265, "Obtain Available Appointment").

FIG. 5 illustrates one example of an interactive screen 500 displaying a schedule of available service call appointments 520 for the upcoming week (step 270, "Provide Available Appointments, FIG. 3). Shading or colored time slots (e.g., time slot 525) may be used to indicate available times slots for scheduling an appointment.

The user selects, e.g., clicks on, using a mouse or other pointing device, one of the available blocks or time slots. Thereafter, the scheduling process is continued by selecting or clicking on a button 530 to send the selection from computing unit 140 (FIG. 1) to computing unit 120 (FIG. 1) (step 275, "Receive Selected Appointment"). One example of a confirmation screen 600, as shown in FIG. 6, is then displayed, which notes that a factory service technician will be out to service the appliance on the chosen date during the chosen time. At this point, a service call is not yet scheduled.

Additional information may be displayed on confirmation screen 600, for example, a price estimate for the service call, that payment is required at time of the service, a reference number of the appointment, etc. Typically, the price estimate is based on the regional location of the user. In addition, the price estimate may list the fee for making the service call to the home for the technician in diagnosing or confirming the nature of the problem with the appliance, and a price estimate for repairing the problem. The user, after reviewing the estimates of fees, can decide at this point whether to continue to schedule a service call.

The user affirmatively confirms the appointment for the service call by selecting or clicking on a confirm service call button 630. This requires the user

to take a positive action to confirm the service call for the available time slot and the estimated fees.

Desirably, a notification screen (not shown) may be displayed in response to selecting button 630, in which the appointment is set as unavailable and identified as being confirmed (step 280, "Confirm Scheduled Appointment/Set Selected Appointment As Unavailable) and that a factory service technician will be out to service the appliance on the selected date during the selected time slot. Thereafter, notification is made to the factory service provider via access to computing environment 100 or via facsimile or e-mail, etc. of the user's confirmed appointment (step 285 "Notify Service Provider"). As noted above, if during the service call at the user's home, the user decides not to repair the appliance, the user would only be required to pay the fee for having the service technician making the visit to the home.

With reference again to FIG. 5, the blocks of time generally span four hours, but could span other amounts of time. Desirably, special instructions are provided to the user and displayed at the bottom of the screen at box 540. Special instructions may, for example, indicate that the service provider can call the user thirty minutes prior to arriving at the appointment, allowing a user to leave from work and meet the service provider at home at the same time. From the present description, it will be appreciated by those skilled in the art that the special instructions may allow a user to select from a list or plurality of different special instructions and include the ability to obtain a preferred telephone number for contact or paging prior to the scheduled appointment. Advantageously, it is possible for computing environment 100 to notify the user automatically via e-mail or facsimile twenty-four hours before the scheduled appointment as a reminder to the user of the scheduled appointment.

The displayed schedule is desirably updated in real-time, so that as time slots fill up as confirmed by users of the system, or open up as time slots become available, e.g., if an appointment is canceled by users. The schedule

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If there is more than one authorized service provider, a list of the authorized service providers is displayed for review by the user, (step 255, "Display List of Service Providers"). FIG. 7 illustrates one example of an authorized service provider interactive screen 700 identifying two authorized service providers. An authorized service provider is obtained by the user selecting one of the listed authorized service providers (step 260, "Obtain Selected Service Provider", FIG. 3) If there is only one authorized service provider, this screen can be skipped over.

With reference again to FIG. 3, available appointments for the selected service provider are obtained or retrieved from a database of available appointments for a plurality of authorized service providers, desirably in real-time (step 265, "Obtain Available Appointment"). FIG. 8, illustrates one example of an interactive screen 800 displaying a schedule of available service call appointments 820 for the upcoming week (step 270, "Provide Available Appointment", FIG. 3.) Shading or colored time slots may be used to indicate available times slots for scheduling a preferred appointment.

Where a user is using the system to schedule a service call and the time that the user is accessing the system is before noon, available appointment time slots will be available for the afternoon and the following days. If the user is accessing the system in the afternoon, available time slots for the next day and thereafter are displayed.

By selecting a preferred available date, and confirming the selection by clicking on a button 830, the selection is transmitted from computing unit 140 (FIG. 1) to computing unit 120 (FIG. 1). Upon receipt of the selected appointment, (step 275, "Receive Selected Appointment"), the selected preferred appointment is set as unavailable and confirmation of the requested scheduled appointment is returned to the user (step 280, "Confirm Scheduled Appointment/Set Selected Appointment As Unavailable"). Depending on the total capacity of the service provider, more than one appointment may be

available for a time slot. For example, more than one technician may be available for one or more of the time slots.

The preferred scheduled appointment is not guaranteed or scheduled at this point. Thereafter, notification is made to the authorized service provider via a facsimile, e-mail, etc. of the user's preferred scheduled appointment, (step 285, "Notify Service Provider"). Information provided to the authorized service providers may include the user's name, contact information, product information, and the preferred appointment. Thereafter, the authorized service provider can get back to the user and confirm or reschedule the appointment.

Authorized service providers may comprise two different types of authorized service providers. For example, one type of authorized service provider may include authorized service providers who are under an agreement or contract with the appliance manufacturer to provide service similar to factory service. Such an agreement may include coverage under warranty, as well as where the authorized service provider agrees to respond immediately back to the user after notification of the user's selected preferred appointment date. The other type of authorized service provider may not be under an agreement or contract with the manufacturer but have satisfied certain requirements for becoming an authorized service providers for certain product lines and/or models. When obtaining an available authorized service providers for a user, computing environment 100 can preferentially list service providers which are under an agreement or a contract for selection by the user as described above.

Desirably, if the user purchased the appliance from a store, e.g., Joe's Appliances, which is also an authorized service provider, when providing a list of the regional authorized service providers to the user, Joe's Appliances can be positioned at the top of the list. A database can be used for storing user purchases with authorized service providers.

Where there is no agreement between a regional authorized service provider and the appliance manufacturer, a list of authorized service providers along with contact information such as a telephone number is displayed for the user to use in contacting the service provider directly for a service call. The list of authorized service providers, while not under agreement to respond immediately to a user, is particularly important to the user where the product is under warranty and in order to have the repair covered under a manufacturer's warranty, repair by an authorized service provider is required.

From the present description, the system and scheduling technique of the present invention provides a seamless approach from the user's perspective in scheduling a factory service provider or authorized service provider for repair of a product such as a home appliance.

While computing environment 100 is desirably suitable for all users or consumers for scheduling a service call for repair of an appliance over the Internet, computing environment 100 may be linked to business-to-business related systems as well. For example, computing environment 100 along with the logic and interactive screens described above can be accessed and used by businesses such as appliance retailers for scheduling a factory service provider or an authorized service provider service call for a product on the showroom floor such as an appliance having a broken handle. In addition, the system can be used by the store personnel where a user who has purchased an appliance at an appliance retailer returns to the retailer requesting repair of the appliance.

Computing environment 100, after a user has scheduled an appointment for a service call, desirably is provided with updating capabilities to allow the user to update the service call. For example, should a conflict with the scheduled appointment arise, the user would be able to enter the system and reschedule the appointment for a different time and/or a different date. The system may allow the user to retrieve information relating to the scheduled appointment by entering the customer's last name or the customer's telephone number.

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